Northeast
Nuclear Energy

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The Northeast Utilities System

DEC 10 1998

Docket No. 50-423
B17583

Re: 10 CFR 50.73(a)(2)(iv)

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station Unit No. 3
Licensee Event Report 98-044-00
"Reactor Trip Due to High Differential Pressure Between "A" and "B" Condensers"

This letter forwards Licensee Event Report (LER) 98-044-00 (Attachment 2), documenting a condition that was determined reportable at Millstone Unit No. 3 on November 11, 1998. This LER is submitted pursuant to 10 CFR 50.73(a)(2)(iv). Northeast Nuclear Energy Company's (NNECO) commitments in response to this event are contained within Attachment 1 to this letter.

Should you have any questions regarding this submittal, please contact Mr. David W. Dodson at (860) 447-1791 extension 2346.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: C. J. Schwarz
Unit Director, Millstone Unit No. 3

BY: _____
D. S. McCracken
Assistant Unit Director - Millstone Unit 3

Attachment: 1) NNECO's commitments in response to LER 98-044-00
2) LER 98-044-00

cc: H. J. Miller, Region I Administrator
A. C. Cerne, Senior Resident Inspector, Millstone Unit No. 3
J. W. Andersen, NRC Project Manager, Millstone Unit No. 3
E. V. Imbro, Director, Millstone ICAVP Inspections
Corrective Action Group Files (CR M3-98-4744)

IMM:im

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Attachment 1

Millstone Nuclear Power Station, Unit No. 3
NNECO's Commitments In Response To
LER 98-044-00

December 1998

List of Regulatory Commitments

The following table identifies those actions committed to by NNECO in this document. Please notify the Manager - Regulatory Compliance at the Millstone Nuclear Power Station Unit No. 3 of any questions regarding this document or any associated regulatory commitments.

Number	Commitment	Due
B17583-1	Complete root cause analysis.	January 15, 1999
B17583-2	Surveillance Procedure 3665.2 "Intake Structure Condition Determination" has been modified by including a step requiring notification of the Shift Manager, Operations Manager, and Intake Structure Coordinator of forecasted severe weather conditions.	Complete

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Attachment 2

Millstone Nuclear Power Station, Unit No. 3
NNECO's Submittal of
LER 98-044-00

December 1998

1179

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104

EXPIRES 04/30/99

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Millstone Nuclear Power Station Unit 3	05000423	1 OF 4

TITLE (4)

Reactor Trip Due to High Differential Pressure Between "A" and "B" Condensers

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	11	1998	98	-- 044 --	00	12	10	98	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	89%	☐ 20.2201(b)	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)	☐ 50.73(a)(2)(viii)
		☐ 20.2203(a)(1)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)	☐ 50.73(a)(2)(x)
		☐ 20.2203(a)(2)(i)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(iii)	☐ 73.71
		☐ 20.2203(a)(2)(ii)	☐ 20.2203(a)(4)	☒ 50.73(a)(2)(iv)	☐ OTHER
		☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(1)	☐ 50.73(a)(2)(v)	Specify in Abstract below or in NRC Form
		☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
David W. Dodson, Supervisor Unit 3 Regulatory Compliance	(860)447-1791 X2346

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
☐ YES (If yes, complete EXPECTED SUBMISSION DATE).	☒ NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 11, 1998, at approximately 0735 hours, with the unit at 89 percent power, a manual Reactor Trip was initiated when the differential pressure (D/P) between the "A" and "B" Circulating Water System (CWS) condensers measured greater than 2 inches water gauge (w.g.). This event occurred while the "A" waterbox was being back-flushed due to high differential pressure across the waterbox. This condition is reportable pursuant to 10 CFR 50.73(a)(2)(iv) as any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS).

The cause of the event is attributed to high levels of debris impinging on the traveling screens due to severe weather resulting in a high D/P across the traveling screens which caused the "B" circulating water pump to trip. Because the "A" circulating water pump was procedurally removed from service to facilitate back-flushing of the "A" waterbox, loss of the "B" pump resulted in a loss of cooling to the "A" condenser. This lack of cooling resulted in a procedurally driven reactor manual trip due to an increase in differential pressure between condensers. A Root Cause Analysis relative to this event is in progress. If the results of the analysis differ from the results presented herein a supplement to this LER will be submitted.

Corrective actions include modifying procedures to address NNECO response to adverse weather conditions, repairing inoperable mechanical components i.e. screens and trash conveyor, and reinforcing expectations for severe weather preparation.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Millstone Nuclear Power Station Unit 3	05000423	98	-- 044 --	00	2 OF 4

TEXT *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

I. Description of Event

On November 11, 1998 at 0508, a reactor downpower was initiated in order to perform a back-flush of the "B" Circulating Water System (CWS) waterbox. Reactor power was reduced to 95% and back-flushing commenced at 0558. A subsequent downpower action was initiated at 0601 in response to a decrease in condenser vacuum. Back-flushing of the "B" waterbox was terminated at 0610 due to indications that there was an increase in differential pressure across the "A" screens. At 0729 back-flushing of the "A" waterbox commenced. At 0734, the "B" circulating water pump tripped automatically due to high screen D/P. At 0735 hours, with the unit at 89 percent power, a manual reactor trip was initiated when the differential pressure between the "A" and "B" condensers was noticed to be greater than 2 inches (w.g.). The plant responded normally to the trip. This included actuation of the ESF systems, Auxiliary Feedwater and Feedwater Isolation. This condition is reportable pursuant to 10 CFR 50.73(a)(2)(iv) as any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS).

II. Cause of Event

The cause is attributed to high levels of debris impacting on the traveling screens due to severe weather resulting in a high D/P across the traveling screens which caused the "B" circulating water pump to trip. Because the "A" circulating water pump was procedurally removed from service to facilitate back-flushing of the "A" waterbox, loss of the "B" pump resulted in a loss of cooling to the "A" condenser. This lack of cooling resulted in a procedurally driven reactor manual trip due to an increase in differential pressure between condensers.

III. Analysis of Event

A manual reactor trip was initiated when the differential pressure between the "A" and "B" condensers was noticed to be greater than 2 inches (w.g.). Following the trip all plant systems responded as required. This event is reportable pursuant to the requirements 10 CFR 50.73(a)(2)(iv) as any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS).

The failure of NNECO to anticipate the effect of environmental conditions such as high winds, high tides, turbulent waters, and a substantial amount of additional debris (leaves, sticks and twigs) beyond the always present kelp and seaweed being conveyed into Long Island sound from various sources contributed to this manual reactor trip.

Factors contributing to this event include the following.

1. Operating procedures requires that the "A" screen wash pump be secured during back-flushing of the "A" waterbox. This action compromised the ability to clean and remove debris from the screens.

2. Operating the "A" screen in reverse to optimize debris removal during the back-flushing evolution could not be performed due to a concern of foreign material in the screen gearbox.

3. Ebb tide combined with seasonal river debris and a shift in wind from south-southwest (SSW) prompted a sudden increase in volume of debris carried into the intake.

(Analysis of Event-continued)

4. Fish sprays were clogged to some degree which caused a decrease in spray flow, thereby affecting the ability to remove debris, and increased screen debris carryover.

5. Screen trough cover and a rake were lodged in screen trough causing backup of debris.

As a consequence of the above conditions, the MP3 intake structure became clogged with debris and the plant was manually tripped when two of the six CWS pumps became unavailable (the "A" pump was secured due to back-flushing and the "B" pump tripped automatically due to high screen D/P) which caused a high differential pressure between the "A" and "B" condenser.

The CWS including the traveling screen and disposal system, with the exception of the circulating water discharge tunnel and portions of the circulating and service water pumphouse are designated as non-safety related. Failure of this system does not affect any safety related equipment or the capability to shutdown the reactor. As such there are no safety consequences associated with this event.

IV. Corrective Action

The following corrective actions were completed prior to returning the unit to service:

1. Surveillance Procedure 3665.2 "Intake Structure Condition Determination" has been modified by including a step requiring notification of the Shift Manager, Operations Manager, and Intake Structure Coordinator of forecasted severe weather conditions.
2. Repair of the "A" screens to ensure that they are operational in the reverse direction has been completed.
3. Clearing all fish spray nozzles has been completed.
4. Troubleshooting and testing of the debris conveyor has been completed.

The following corrective actions will be completed.

1. Complete a root cause analysis.

V. Additional Information

None

Similar Events

The following LERs were reviewed in order to assess the results of similar root cause analysis.

LER 88-014-00 Reactor Trip Due to Turbine Trip Due to Low Condenser Vacuum

On April 13, 1988 at 1652 hours, with the plant at 100% power in Mode 1, the plant received an automatic Reactor Trip as a result of a Turbine Trip. The Turbine Trip was due to a loss of condenser vacuum in the "A" main condenser. Loss of condenser vacuum was caused by the automatic tripping of the "A" and "B" CWS pumps due to high differential pressure across the traveling screens.

The root cause of the trip was a leaking isolation valve on the screen duplex strainers requiring the operating pump to be removed from service.

(Similar Events-continued)

LER 90-011-00 Manual Reactor Trip Due to Imminent Loss of Condenser Vacuum

On March 30, 1990 at 1328 hours with the plant at 80% power in Mode 1, a manual Reactor Trip was initiated due to an anticipated Turbine Trip from a loss of condenser vacuum. Prior to the trip, the intake structure screen wash system was removed from service to install a repaired elbow. The installation would have restored the second 100% screenwash pump to service before the seasonal high seaweed loading began. The effort to manually clear the screens was not enough to prevent the two circulation water pumps from tripping.

The root cause was the failure to collect the debris from the manual screen washing.

LER 90-013-01 Manual Reactor Trip Due to Imminent Loss of Condenser Vacuum

On April 16, 1990, at 1201 hours with the plant in Mode 1 at 48% power, at 572 degrees Fahrenheit and 2250 psia, a manual Reactor Trip was initiated because of an anticipated Turbine Trip due to a loss of condenser vacuum. A rapid buildup of seaweed on the "B" traveling screen resulted in the automatic trip of 3CWS-P1B due to high screen differential level.

The root cause of this event was inadequate administrative guidance in that debris was allowed to collect on the trash rack. When the operator proceeded to clean the rack, seaweed broke free and clogged "B" traveling screen.

LER 90-014-00 Manual Reactor Trip Due to Imminent Loss of Condenser Vacuum

On May 19, 1990 at 2033 hours with the plant in Mode 1 at 60% power a manual Reactor Trip was initiated because of an anticipated Turbine Trip due to a loss of condenser vacuum. A rapid buildup of seaweed on the "B" traveling screen resulted in the automatic trip of 3CWS-P1B.

The root cause of this event was a design deficiency in that the traveling screen capacity was inadequate. A contributing cause was the peak seaweed season.

Manufacturer Data
Circulating Water Structures.....NN

EIIS Component Code
Pump.....P
Traveling Screen.....SCN

CATEGORY 2

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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SUBJECT: Forwards LER 98-044-00,re RT due to high differential pressure between "A" & "B" condensers on 981111.Util commitments in response to event contained within attachment 1 of ltr.

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